

Before the  
FEDERAL COMMUNICATIONS COMMISSION **RECEIVED**  
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In the Matter of )

Advanced Television Systems )  
and Their Impact upon the )  
Existing Television Broadcast )  
Service )

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

) MM Docket No. 87-268

To: The Commission

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COMMENTS  
OF THE  
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## S U M M A R Y

The Land Mobile Communications Council (LMCC) supports the efforts of the Federal Communications Commission to recover long-unused prime spectrum from the television broadcast allocation. The proposed recovery of a portion of the 400 MHz of prime spectrum for non-broadcast uses represents a win-win situation that can accommodate both digital television service (DTV) and new mobile operations.

To make this recovery more meaningful, LMCC recommends a number of minor modifications to the Commission's proposed DTV allotment approach. LMCC is concerned that without modification, the DTV allotment plan will cause significant interference to land mobile operations that use a small portion of the TV allocation in 11 urban areas.

For the recovery effort to have true value, the Commission must take steps to ensure that no new broadcast operations are added in channels 60-69 and that existing operations in those channels are relocated in a timely manner. Doing so should not impose significant detriment on the broadcast industry, because these channels are the least desirable for broadcast operation.

Land mobile operations in the 470-512 MHz band must also receive a much higher degree of protection than set forth in the Further Notice of Proposed Rule Making.

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**To:   The Commission**

**COMMENTS OF LMCC**

The Land Mobile Communications Council (LMCC) submits the following comments to the Commission's Sixth Further Notice of Proposed Rule Making in the above-referenced proceeding. This Further Notice (FNPRM) proposes a channel allotment plan for the introduction of over-the-air terrestrial digital television service (DTV). As part of that plan, the Commission has proposed to recover a portion of the unused broadcast spectrum, thereby making more spectrally efficient use of this valuable resource and providing an opportunity to bring other services to the public. In essence, the outcome of this proceeding will determine whether digital television is accommodated in a spectrally efficient or a spectrally wasteful manner. LMCC supports the Commission's proposed recovery of a portion of the 400 MHz of prime spectrum for non-broadcast uses as a win-win situation which can accommodate both DTV and new mobile operations. To make this recovery more meaningful, LMCC recommends a number of minor modifications to the Commission's proposed DTV

allotment approach. LMCC is also concerned that without modification, the DTV allotment plan will cause significant interference to land mobile operations which use a small portion of the TV allocation in 11 urban areas.

## **I. LMCC Interest**

LMCC is a non-profit association of organizations representing virtually all users of land mobile radio and providers of land mobile services and equipment. LMCC acts on behalf of the vast majority of public safety, business, industrial, private, common carrier, and land transportation radio users, as well as a diversity of land mobile service providers and equipment manufacturers.

LMCC's membership includes the following organizations:

- American Association of State Highway and Transportation Officials (AASHTO)
- American Automobile Association (AAA)
- American Mobile Telecommunications Association (AMTA)
- American Petroleum Institute (API)
- American Trucking Associations, Inc. (ATA)
- Association of American Railroads (AAR)
- Association of Public Safety Communications Officials-International (APCO)

- Forest Industries Telecommunications (FIT)
- Forestry-Conservation Communications Association (FCCA)
- Industrial Telecommunications Association, Inc. (ITA)
- International Association of Fire Chiefs (IAFC)
- International Association of Fish and Wildlife Agencies (IAFWA)
- International Municipal Signal Association (IMSA)
- International Taxicab and Livery Association (ITLA)
- Manufacturers Radio Frequency Advisory Committee (MRFAC)
- National Association of State Foresters (NASF)
- Personal Communications Industry Association (PCIA)
- Telecommunications Industry Association (TIA)
- UTC, The Telecommunications Association (UTC)

## **II. The Television Broadcast Allocation is Ripe for Recovery**

In its FNPRM, The Commission has proposed a draft allotment plan which holds the promise of recovering 138 MHz of unused television spectrum for other uses such as mobile operations. According to the FNPRM, this recovery could occur in two stages. First, by minimizing any DTV assignments in channels 60-69, the Commission can set the stage for near-term recovery of some or all of that spectrum.

Second, by ensuring that all broadcasters have either a DTV or NTSC allotment within a “core area” of channels 7-51, the Commission sets the stage for longer term recovery of the spectrum outside that core area. Even with this potential spectrum recovery, each broadcaster would enjoy 2 channels or 12 MHz of spectrum for some transition period whose end date is yet to be specified. This second channel approach is proposed given the complexities of moving from an analog NTSC to digital service.

LMCC fully recognizes the difficulty of implementing new technologies in occupied spectrum. Many of LMCC’s member constituencies wrestle with that very issue in refarming the private land mobile bands and in moving from analog to digital cellular systems. In these cases, mobile licensees are deploying more efficient technologies without the benefit of being given an “extra channel” in which to make the transition. Accordingly, LMCC believes the broadcast community should rejoice that the Commission has so generously offered to give each eligible existing broadcaster an additional 6 MHz channel over which to implement digital TV. No other group of licensees before the Commission have been so fortunate.

Terrestrial over-the-air television enjoys an allocation of over 400 MHz of spectrum. This allocation was made in the days when over-the-air broadcast was viewed to be the primary method through which the public received television programming. However, alternative methods of delivering that programming have flourished. Today, approximately 65% of the US TV households receive their local

and national programming over cable. Multiple Direct Broadcast Satellite providers offer another programming “pipe” into the home and the Telecommunications Act of 1996 sets the stage for additional highways of video entertainment.

Further, the Commission previously recognized that today only about 120 MHz of that 400 MHz is actually used for primary television operations even in the largest cities. Outside the largest cities, even less of that spectrum is put to actual use. Redeveloping a portion of the allocation for non-broadcast use while doubling the spectrum each primary television licensee holds is possible because the television allocation is so drastically underutilized.

On a more skeptical note, Broadcasting and Cable Magazine recently reported that the original impetus behind terrestrial over-the-air DTV spectrum allotments was an effort to maintain the allocation rather than to promote actual DTV implementation. The magazine reports on a new book *The Battle for the Future of Television*, by New York Times editor Joel Brinkley:

Brinkley describes the “high definition television race” as one that spawned creative genius while also displaying “rank hypocrisy, conniving duplicity [and] selfish disregard.”... Don’t believe all the boosterism that will accompany the introduction of digital HDTV,” the author warns in the book’s introduction. “In truth, the origins of this remarkable new technology could hardly have been more cynical, the triumphs

more serendipitous.” Brinkley traces those origins to NAB efforts to prevent the FCC from reallocating unused channels to land mobile. “Why don’t we tell them we need all that extra spectrum for high definition television?” the book quotes former executive John Abel asking during a strategy session.

LMCC’s experience is consistent with Mr. Brinkley’s report. The Commission in Docket 85-172 was poised to allocate additional land mobile spectrum in eight urban areas. Suddenly, the apparition of DTV (then billed as High Definition Television or HDTV) appeared and the Commission abandoned the proposed allocation. For the past 10 years the broadcast community has continued to warehouse vast amounts of unused spectrum based on the promise of DTV.

History and broadcast motives aside, LMCC believes it is of utmost importance that the Commission move aggressively to recover unused spectrum from the television broadcast allocation so it can be put to use. Fortunately, the Commission appears to have developed a plan which with some modifications, has the potential to accomplish that goal.

### **III. Recovery of Channels 60-69 is a Win-Win Situation**

The standard of living in the US is one of the highest in the world. Ready access to water and food supplies, transportation, electric power, petroleum products,

police and fire protection, emergency medical treatment, and telephone infrastructure is the norm rather than the exception. Mobile communications play a critical role in providing the American public with these products and services.

Some of the current communications used to support the provision of our standard of living is a direct result of a previous reallocation of unused broadcast and government spectrum in the 800-900 MHz area. This reallocation directly led to the creation of trunked dispatch systems, cellular telephone service, modern nationwide and regional paging, and air-to-ground telephone service, among other uses. The spectrum in channels 60-69 is adjacent to these allocations and therefore would be of significant benefit for mobile use. The Commission has the opportunity to repeat this success in establishing a DTV allotment plan which incorporates provisions to recover spectrum in channels 60-69.

Actual reallocation of recovered spectrum would be subject to a further rule making proceeding. However, in its FNPRM, the Commission raised the possibility of using the recovered spectrum for public safety and additional commercial mobile radio service:

While we are not, in this proceeding, deciding that this spectrum be reallocated, we note that there are other uses for this spectrum. For example, this spectrum could be licensed through competitive bidding for flexible mobile operations; a portion of it

could be used to meet public safety needs; and/or a portion could be designated temporarily or permanently for LPTV and TV translator stations. If such an early recovery were to occur, we would initiate a separate allocation proceeding to decide how this spectrum should be used.<sup>1</sup>

LMCC notes that the public safety community recently concluded an extensive study which identified the need for an additional 25 MHz of spectrum over the next 5 years and channels 60-69 as a potential resource to meet that need.<sup>2</sup> Four television channels (24 MHz) almost meets this requirement, so 36 MHz of spectrum would remain for other uses if the channel 60-69 band is fully cleared.

Many private land mobile users who are not classed as public safety by the Commission's rules also maintain infrastructures critical to the well-being, safety and economic welfare of the population as a whole. These include electric and water utilities, petroleum, railroads, transportation and many smaller businesses who all support critical facets of our everyday life.

Previously, the private land mobile community documented the need for additional spectrum to support advanced communications systems for both public

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<sup>1</sup> FNPRM at para. 26.

<sup>2</sup> Final Report of the Public Safety Wireless Advisory Committee in WT Docket No. 96-86, Sept. 1996, at page 3.

safety and critical industries.<sup>3</sup> Subsequently, in its report *U.S. National Spectrum Requirements-Projections and Trends* the National Telecommunications and Information Administration (NTIA) concluded that 71 MHz of spectrum would be required by 2004 to meet the dispatch and advanced communications requirements of private users, including both public safety and industrial operations. This need included an additional 21 MHz for dispatch operations and 50 MHz for advanced wide area data and imaging systems.<sup>4</sup> In reaching this conclusion, NTIA considered projections of growth, the impact of more spectrally efficient technologies in existing bands and new advanced applications.

The success of mobile services in the US has always stemmed from the ability of users to choose from best-fit solutions for their specific communications need. For some needs, obtaining service from a CMRS carrier makes perfect economic and operational sense. For others, it does not. Therefore, LMCC recommends the Commission ultimately look toward balancing the provision of spectrum from any recovery among public safety, other critical private operations, and CMRS.

Recovering spectrum specifically in channels 60-69 would also appear to hold benefits for the broadcast community. Within the television allocation, these upper

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<sup>3</sup> Petition for Rule Making by the Coalition of Private Users of Emerging Multimedia Technologies (COPE), filed with the Commission December 23, 1993.

<sup>4</sup> U.S. National Spectrum Requirements - Projections and Trends, NTIA, March 1995, at Table 1-1, page 33 and page 38.

channels are the least desirable for television use as propagation conditions make audience coverage and advertising revenues more difficult to attain. By providing an opportunity for broadcasters currently operating in channels 60-69 to move down in the band as they convert to DTV, the Commission helps make broadcast operations more cost effective.

#### **IV. Modifications to the Plan can Optimize Spectrum Recovery**

LMCC fully supports the Commission plan to recover unused broadcast spectrum. There are a number of modifications to the plan, however, which would make the actual spectrum recovery much more meaningful and timely.

In the NPRM the Commission proposed that 30 DTV allotments be made in channels 60-69. Currently, these 10 channels support approximately 100 NTSC stations. Further the Commission proposed to allow broadcasters using channels 60-69, both NTSC and DTV, to continue to use those channels as long as broadcasters beneath channel 60 were permitted to retain two channels.<sup>5</sup>

LMCC recommends that the Commission first re-examine its draft allotment plan to determine if alternative solutions exists that would avoid the need to make any DTV assignments in the channel 60-69 block. The procedure defined in the FNPRM

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<sup>5</sup> FNPRM at paras. 26 and 27.

notes that the computer program used by the FCC staff employs a system of “penalties” assigned to certain DTV allotment solutions. While the relative value of various penalties are not listed, they appear to be chosen by FCC based on various policy objectives. Therefore, if faster recovery of channel 60-69 were a higher priority, higher penalties could be assigned to DTV allotments within channel 60-69, and a solution with no DTV allotments in that channel block may emerge.

Further, with no given end date when each broadcast licensee must return one of the channels, operation of NTSC stations in channels 60-69 is indefinite. That does not seem to be consistent with a policy objective of recovering those 10 channels for other uses. In contrast, the Commission established a definitive schedule of negotiations between PCS and fixed microwave licensees to help redevelop the 1.8 GHz band as quickly as possible.

Clearly some mechanism to retire NTSC operation within channel 60-69 in a timely manner would be helpful to any serious pursuit of spectrum recovery. For example, given the relatively poor propagation of broadcast signals in these higher TV channels, the Commission should closely examine the extent to which the audience share for those 100 NTSC stations is actually achieved over cable rather than over-the-air. If such reception is primarily over cable, retiring the NTSC license to transmit over-the-air does not necessarily have to equate to removing the programming option from the public.

With the proper regulatory adjustments, this concept could also be a win-win situation for all involved. Currently, cable operators distributing the programming of such stations because of must-carry regulations receive no compensation from broadcasters for doing so. However, from a business perspective, these 100 broadcasters could pay cable operators for signal carriage in lieu of paying the power bills, transmitter and tower costs associated with over-the-air duplication of the signal transmission. Such an approach would allow the Commission to reclaim channels 60-69 much faster, maintain or reduce costs for the broadcaster, compensate cable operators for using their capacity and maintain the provision of programming to the public.

## **V. Existing Channel 14-20 Land Mobile Operations Must be Protected**

The land mobile services operate on spectrum within TV channels 14-20 (470-512 MHz) in 11 top urban areas. Depending on the urban area, land mobile sharing is allowed on one or two of the channels within 14-20 block. These channels are shared among all types of public safety and private users.<sup>6</sup> The Commission's recently released Inventory of Spectrum Usage shows 41,705 land mobile base and fixed stations operating within these channels.<sup>7</sup> This study does not show the associated

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<sup>6</sup> Public safety users also have access to spectrum from an additional TV channel in the New York and Los Angeles areas.

<sup>7</sup> Spectrum Inventory Table -- 137 to 100 GHz, released October 16, 1996.

number of mobile units. However, private radio statistics from the Commission's fiscal year 1994 annual report show over 400,000 transmitters authorized for that band at that time.<sup>8</sup>

In the FNPRM, the Commission assumes certain spacing requirements between land mobile operations and DTV allotments. The spacings between DTV allotments and land mobile city centers are 155 miles for co-channel and 110 miles for adjacent channel. However, there are a number of situations recognized in which these spacings are not met.<sup>9</sup> According to the FNPRM, the DTV allotment on channel 16 in New Haven, CT would be only 117 miles from the channel 16 land mobile center city reference in Boston.

For adjacent channel, there are many more non-compliant situations, many with extreme short-spacing which will cause significant harmful interference to land mobile operations. For example, DTV allotment on channel 16 in New Haven, CT would also be only 71 miles from the adjacent channel 15 land mobile center city reference in New York. Since base stations may be located up to 50 miles from the land mobile center city reference and mobiles may be operated up to 30 miles from their respective base stations. Under the Commission's draft plan, there is virtually no isolation between the DTV channel 16 allotment in New Haven, CT and the base station

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<sup>8</sup> 1994 FCC Annual Report at page 121.

<sup>9</sup> Erratum to FNPRM, issued September 12, 1996.

receivers supporting thousands of existing mobile users.

The Commission has listed 12 land mobile sharing situations in which the 110 mile (175 km) separation is not met. These situations are:

<u>DTV City</u>	<u>DTV CH</u>	<u>LM City</u>	<u>LM CH</u>	<u>SPACING (miles)</u>
Corona, CA	15	Los Angeles	14,16	16
San Francisco, CA	15	San Francisco	16	6
Providence, RI	15	Boston	14, 16	36
New Haven, CT	16	New York	15,16	71
Frederick, MD	16	Washington	17	32
Kenosha, WI	16	Chicago	15	47
Manchester, NH	17	Boston	16	51
San Francisco, CA	18	San Francisco	17	2
Secaucus, NJ	18	Philadelphia	19	80
San Bernadino, CA	19	Los Angeles	20	32
Los Angeles, CA	21	Los Angeles	20	16
Vineland, NJ	21	Philadelphia	20	21

Clearly, these extreme short spacings are inadequate to prevent interference to land mobile operations. The Commission states “we believe that there are engineering solutions available to handle any adjacent channel interference concerns between land mobile and DTV.”<sup>10</sup> However, the Commission gives no further clue what engineering solutions it assumes will prevent interference to the land mobile operations in these bands. Therefore, LMCC is unable to evaluate what solutions the Commission may have in mind.

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<sup>10</sup> FNPRM at para 93.

As shown in Figure 1, a short-spaced DTV assignment on the lower adjacent channel to land mobile operation will place the strongest interfering signals into mobile and control station receivers within 0-3 MHz of the DTV channel edge. When the short-spaced DTV allotment is on the upper adjacent channel to land mobile, it will place the strongest interfering signal into base station receivers within 0-3 MHz of the DTV band edge. These base station receivers are often at tower and building sites with excellent effective antenna heights. There will be virtually no isolation, except free space loss, between these proposed adjacent channel DTV allotments and the existing land mobile base station receivers near the band edge. Between 3 and 6 MHz from the DTV channel edge, the interference impact is reversed, i.e., for lower adjacent DTV's impact is to base receivers, for upper adjacent DTV's the impact is to mobile and control station receivers.

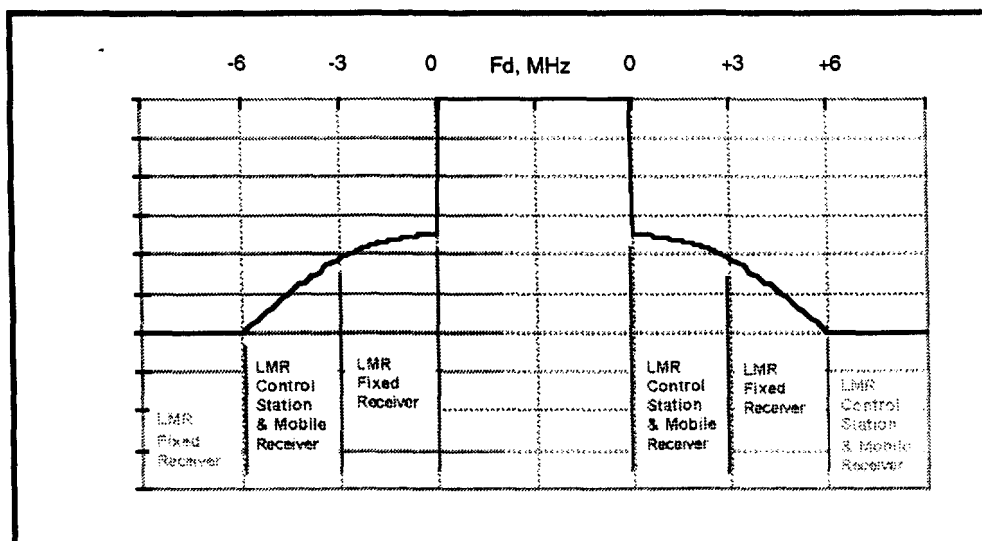


Figure 1: DTV Emission Mask vs. TV Band LMR Assignments

A significant tightening of the DTV emission mask may partially reduce the level of interference for some of these adjacent channel situations. In practice many NTSC transmitters currently provide approximately 60 dB of protection at the band edge. Some channel 14 and 69 NTSC stations operate at reduced power and/or have installed additional filtering to the visual carrier to help reduce interference to adjacent land mobile users.<sup>11</sup> However, given the extreme short-spacings proposed, the broadband nature of the DTV signal, and the relative powers of television and land mobile operations, it is unlikely that additional filtering of the DTV output will be the total solution to this harmful interference. LMCC anxiously awaits comments from the broadcast community to see what technical solutions it offers to prevent harmful interference to these existing critical land mobile operations.

## **VI. Summary**

LMCC supports the Commission's efforts to recover long-unused prime spectrum from the television broadcast allocation. For this effort to have true value, however, the Commission must take steps to ensure that no new broadcast operations are added in channels 60-69 and that existing operations in those channels are relocated in a timely manner. Doing so should be a win-win situation as these channels

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<sup>11</sup> Section 73.687(e)(1) of the Commission rules requires NTSC spurious emissions be attenuated at least 60 dB below the level of the visual carrier at 3 MHz from the band edge and that additional attenuation be used if there is interference to any other service.

are the least desirable for broadcast operation.

Land mobile operations in the 470-512 MHz band must receive a much higher degree of protection than set forth in the FNPRM. The draft plan incorporates extreme short-spacings to these land mobile operations which support the operations of public safety, critical industries and businesses in eleven top urban areas.

**WHEREFORE, THE PREMISES CONSIDERED,** the Land Mobile Communications Council respectfully submits these Comments and urges the Federal Communications Commission to act in accordance with the views expressed herein.

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November 22, 1996

**CERTIFICATE OF SERVICE**

I, Frederick J. Day, an employee of the Industrial Telecommunications Association, Inc., do hereby certify that on the 22nd day of November 1996, copies of the foregoing LMCC Comments in MM Docket No. 87-268 were hand-delivered to the parties named below:

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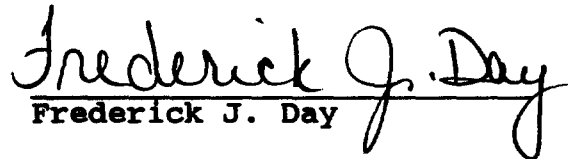
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